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SOME CONSIDERATIONS IN THE EVALUATION OF SELF CARE

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Coincident with the emphasis on rehabilitation since World War II, there has grown an increasing awareness, of the importance of the ability of the individual to care for his own daily needs, as a basic step in the total rehabilitation of the patient.

Previous to the publications of Deaver and Brown¹ in 1942, there was apparently little attention paid to determining whether the patient had the ability and potentials for accomplishing the everyday simple tasks which come so naturally to the healthy as to be done on almost a reflex level. Sheldon² in 1935 called attention to this oversight when she described how a girl, whom everyone considered to be well rehabilitated, informed her she could not accept a job which was found for her because she could not ascend a curb from the street. As a result of this, special attention was given to teaching self care and a self care evaluation for use with crippled children was developed. A related sort of evaluation of the ability to do self care might be considered as that done in the developing of physical tolerance for cardiac and tuberculous patients. Brush³, for example, in a study conducted from 1915 to 1920 listed daily activities such as bed making, going to the store; personal hygiene and such other simple physical activities as a part of the measured regime in his cardiac convalescent institution. These, however, were permissive in nature, and performance of them, did not depend upon the possession of the physical skill to do the activity, which was taken for granted, but upon the cardiac efficiency of the patient. They were measures of what was safe, physiologically speaking, rather than measures of physical abilities and apparently a natural extension of this idea to embrace testing and teaching of everyday living skills to other disabled individuals was not generally recognized. Since the work of Deaver and Brown, there has been a general development of appreciation, of the importance of self care activities in rehabilitation programs. Many forms for self care evaluation were developed to fit local needs and in-

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terpretations. Nine of these, selected at random, were surveyed with a view to determining what was generally considered as essential in regard to caring for daily needs. The results of this survey follow:

- A. There were a total of two hundred and twenty one different items on self care listed on the nine forms.
- B. The number of different items varied from thirty eight to one hundred and thirty five. The average number was seventy eight.
- C. Forty three items were listed on over half of the evaluations.
 - a. Eight items were listed on all nine evaluations, they were:
 1. Put on, remove braces
 2. Shave or makeup
 3. Write or type test passage
 4. Dial phone
 5. Go up and down stairs
 6. Walk forward on smooth surface
 7. Up bus steps
 8. Down bus steps
 - b. Four items were listed on eight of the nine evaluations, they were:
 9. Wash hands and face
 10. Brush or comb hair
 11. Go up and down stairs with rail
 12. Get in and out of automobile
 - c. Five items were listed on seven evaluations, they were:
 13. Brush teeth
 14. Propel wheelchair forward on smooth surface
 15. Walk up and down grade
 16. Get down and up from floor
 17. Cross street
 - d. Thirteen items were listed on six evaluations, they were:
 18. Move from wheelchair to bed
 19. Move from bed to wheelchair
 20. Tie bow or tie
 21. Put on clothes
 22. Eat with fork
 23. Drink from glass
 24. Take shower or bath
 25. Hold envelope, open, remove letter, replace

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26. Walk backward
27. In and out of chair, erect position
28. Go up curb
29. Put on, remove, tie or buckle shoe
30. Open and close drawers
- e. Fourteen items were listed on five evaluations, they were:
 31. Wind wrist watch
 32. Put on, remove underclothes
 33. Tie shoestrings—listed in addition to 20 or 29
 34. Drink from cup
 35. Get on and off toilet
 36. Walk sideward
 37. Move from crutches to wheelchair
 38. Turn faucets
 39. Operate hasp and padlock
 40. Move from wheelchair to chair
 41. Move from chair to wheel chair
 42. Open and close door
 43. Down curb
- D. Thirty-two items were mentioned four times.
- E. Thirty-nine items are mentioned three times.
- F. Sixteen items are mentioned two times.
- G. Ninety items are mentioned once.

It is apparent in looking over the tabulation of the test items, that there is considerable variance in rehabilitation clinics as to what is considered to be the necessary activities of daily living. This may be attributed to several factors such as:—1) The detail in which patients are tested, one place finding it necessary to use only 38 different items while another needed 135 for a complete evaluation. 2) The local facilities for evaluating the patient. These vary all the way from a special clinic set up for teaching and testing to simply utilizing the natural environment of the hospital. 3) The type of patient to be tested. Self care for a paraplegic, for example, is quite different from that for a hemiplegic in that the former almost always leads, to a large extent, a wheel chair existence while the latter can, in almost all instances, learn and find it practical to ambulate on two feet. Other factors such as the home situation, the personnel available, the interest developed etc., may come to mind.

All the self care evaluations, with one exception, confined their skills of what was to be evaluated to those which fall within the scope of what may be considered as activities of daily living as contrasted with activities required for a vocation. Only one extended their items to include the ability to do work tasks.

In a discussion of an evaluation of self care, it is basically necessary to clarify in our minds, just what

is meant by independence in self care and what are to be considered the activities of daily living. If, by being independent in self care, it is taken to mean exactly what it says, the ability on the part of the patient to do the activity without human aid, and his activities of daily living as acts inherent in the daily doings of ordinary life including locomotion, eating, hygiene, communication, rest and making oneself presentable, a fairly clear cut line of demarcation between activities of daily living and activities of a vocational nature can be drawn as well as a limit set, as to what aid is to be considered permissible. This definition would rule out any help from others, except that of what we may choose to call implied help. For instance one of the tests for ambulation lists, "Walks with the aid of an instructor." It would appear by the above criteria that this would be ruled out, inasmuch as human assistance is required. It is a valid step in the process of learning to walk unaided however. In speaking of implied help, seven of the nine evaluations listed as a test item, "Dial phone." Implied in this activity is help from some outside source in the sense that someone must bring the telephone to the patient unless he can get to the phone himself. This, of course, involves being able to do other parts of the test. In fact almost any single item, when taken out of the context of the whole evaluation would give a distorted picture of the patient's independence to do that item on a practical basis and especially so when removed from association with the parts of the evaluation having to do with ambulation. To be truly independent in the matter of dialing a phone, for example, it is apparent that the patient would have to be able to do at least four skills if we take the patient in bed as a starting point. 1) He must be able to get out of bed (three of the forms did not list this at all); 2) He must be able to travel to the phone (listed on all forms in one way or another); 3) He must be able to dial the phone (listed on seven) and 4) He must be able to get back in bed (listed on six). It can be argued that it would not be necessary for the patient to be able to get back in bed to be independent in dialing a phone but that would seem to be in the nature of giving a man an automobile which would only run north. An alternative to having the patient go to the telephone is, of course, to have a phone installed at the bedside.

The above examples make it evident that two other points in the evaluation of self care must be established before we can judge abilities in this regard with any degree of consistency. The base point at which an evaluation is to begin must be determined, and also, it must be decided how far it is go-

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ing to be permissible to adapt the environment to suit the patient. In considering the first it is only logical that the point to begin would be bedrest since all people require rest and the normal situation is to begin and end the day in bed. It also follows in the usual course of illness and convalescence, that the patient generally starts at complete bedrest and is gradually permitted to be up more and more. Rehabilitation efforts also start with the bed patient and many of the self care aspects of rehabilitation can begin at that time. Attempting to achieve standardized scoring while considering adaptations of the environment presents a much more complicated problem.

There is on the market today an electrically operated bed in which the only physical skill needed on the part of a patient to sit up is to somehow push a button. When accomplished the back of the bed rises and the patient sits up unassisted by human help. By pushing another button he lies down again. The patient, then, is an individual who is independent in the self care activity of sitting up, providing he is in that particular kind of a bed. Whether he should so be scored would be a point of considerable doubt by many therapists. If the process of sitting up is an end of itself, perhaps so, but if it is considered as one step in a series which ends with putting on socks, for example, it is hardly a question but that he would have to be considered as not having passed until he gets himself into a sitting position by strength and agility rather than by volts and amperage. This is not to discount the value such a bed may have as a self care aid for the very severely handicapped. It may represent the extent of self care possible for some. The building of ramps to replace steps, toilet seats with arm supports, low mirrors for use while in a wheelchair and the whole field of designing houses for the handicapped such as paraplegic housing are other examples of changing of the environment to fit the patient. Perhaps no systematic criteria for this adaptation can be established and it will always remain as a large variable in comparing one patient and another in the matter of ability to do self care.

Still another factor in which there is considerable differences between one patient and another and between a patient and himself at different stages in his rehabilitation is the matter of prosthesis, braces, counterweights and other aids more or less intimately associated with the patient himself including wheelchairs. The ability to propel a wheelchair is listed on seven of the nine evaluations considered in this paper. Besides variations which can occur in the mat-

ter of speed, distance covered and the number of hours spent in a wheelchair there is a great difference in the wheel chairs themselves. The place of the motor driven wheel chair in the rehabilitation of patients poses a question in any evaluation of self care as the physical requirements for getting around in a motor driven chair are extremely different from those required for getting around in an ordinary wheel chair.

Individual variations such as these should all be considered in any evaluation of self care. As noted before these differences present problems of comparing one patient with another and also difficulties in comparing one patient with himself at differing stages in his rehabilitation, especially in regard to getting a valid comparison between the time one therapist scores the patient and the time when it is done by someone else. However, in considering the major purpose of a self care analysis these differences, as long as they are noted, may be relatively unimportant considerations if the evaluation becomes an aid in assisting the patient to become as independent in the activities of daily living as it is feasible for him to be.

The self care evaluation can be of great usefulness to all members of the team engaged in the rehabilitation effort. These include, primarily, the patient himself, the medical staff, the nursing staff and specialists in rehabilitation.

To the patient, as the most important member of this team, the self care evaluation would seem to have the following connotations and possibilities for rehabilitation.

1. As a motivation device in which he is stimulated to make progress toward further independence by achieving a measurable amount of success in motor skill which he can appreciate as having a direct bearing upon his rehabilitation. This, based on the very valid premise that nothing succeeds like success.
2. As a bolster of self respect especially for the more profoundly injured. The psychological affront suffered by a full grown person in possession of all his mental faculties who has to be spoon fed must be tremendous. McHugh⁴ has mentioned the increased self respect which became evident following the development of special trays and implements by which the quadriplegic patients could feed themselves. It is only reasonable to suppose that each step in achieving independence by the accomplishment of a self care skill must have its counterpart in the psyche of the individual.

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3. The comfort of comparison. This, in many cases, may be a cold sort of comfort but nevertheless it is true that it is an important factor in rehabilitation. Someone has said, "I cried because I had no shoes until I met a man who had no feet." Each of us is in a relative situation and comparison of one's own state with those around him is going on all the time as is noted in the constant endeavor to, "Keep up with the Jones." It would seem that the accomplishment of one small step toward independence which would make it apparent to the individual that he is in some measurable way better off than someone else, must be a significant boost in morale for the patient. This is perhaps not so much an appeal, basically, to the desire for superiority (although that must enter in) as it is to a spirit of humble thankfulness for the small blessing that he is not as badly off as someone in the next bed or ward.

4. As a means of health maintenance. Abramson⁵ has pointed out how necessary it is for the paraplegic to stand and bear weight on his lower extremities daily if he is to prevent osteoporosis with its related complications of renal calculi and spontaneous fractures. This thought would make it necessary in evaluating self care to consider elements of time, not only from the standpoint of how fast an activity can be done but also as to how long it should be done in specialized instances.

5. To build confidence and assurance that he can do the activities in an acceptable manner. It is important not only that the patient does the activity, but also that he knows he can do it whenever called upon especially if he is to utilize his skill in social situations.

For the Rehabilitation Specialists, of course, the Self Care Evaluation has a direct and meaningful purpose.

1. It is a measure of the patient's progress in rehabilitation.

2. It can be used as a point of departure for the planning of further rehabilitation. The nature of an evaluation itself is such that each item becomes a target objective to be striven for. Buchwald⁶ has shown how each step which cannot be accomplished can be broken down into simpler components and these in turn broken down into basic exercises to accomplish these. In this connection it might be well to mention that it should be almost axiomatic that it is not until every possible effort to train and develop

an individual to accomplish an activity in a nearly normal way is exhausted, that an attempt to "train around" an activity should be made, or extreme modifications of the environment undertaken to meet his needs.

3. It can be utilized to give a fair psychological evaluation as to the patient's desire to become rehabilitated. The tests in the self care evaluation are simple and direct and it is readily apparent to the patient what his accomplishment of the activity means in the way of evaluating his amount of disability. If he secretly wishes to continue a dependency status some clue of this may be obtained from his reaction to these tests. The reverse is just as true of course. It would seem that an interesting psychological study could be made on the acceptance or rejection of the simple tests of self care as related to the desire to become rehabilitated.

4. The self care evaluation can serve as a check list to determine if there is some aspect of the patient's rehabilitation which is being neglected. For instance a patient may have the know how and skill to cross a street but cannot go the required distance before the traffic light changes because his general reconditioning has been neglected and the necessary speed and endurance is lacking. As Sheldon⁷ noted it can bring out hidden weaknesses in the patient which only come to light when under the stress and demands of daily living.

5. The ability of the worker to do vocational tasks is in large part predicated on his ability to do self care activities. The problem of getting to and from work is a self care procedure. In addition to that, many of the physical requirements of a job duplicate those for self care. For instance and to repeat our original example, dialing a phone can be a vocational skill as well as one for self care. Standard job capacities analyses list such acts as standing, sitting, walking, crawling, etc. as factors to be considered in placement.

For the ward physician and nursing staff the self care evaluation has an obvious and practical purpose. They are in the position of being directly responsible for application of the self care items to everybody living on the ward.

1. It is a measure of progress of the patient toward functional recovery and usefulness. They, as the patient's personal physician, nurse and attendant members of the rehabilitation team are vitally interested in the accomplishments he makes.

(Continued on Page 29)

Studies on Neuromuscular Dysfunction, XIII: New Concepts and Techniques of Neuromuscular Reeducation for Paralysis

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PART II

Special Techniques

In working out a program of neuromuscular reeducation for treatment of paralysis, based on achieving maximal contraction of the paralyzed muscles with each effort, a number of techniques and fundamental mechanisms were discovered which are effective in facilitating voluntary muscular contraction. Not only can these facilitating mechanisms be applied individually but summation of excitation from several mechanisms produces an even greater response. Therefore, in order to produce truly maximal voluntary motion, simultaneous application of a combination of facilitating techniques is used routinely.

Techniques for facilitation of voluntary motion influence primarily the motor centers and the quantity of excitation at the synapses of the motor neurons. Given an excitation at this level sufficient to discharge as many anterior horn cells as possible, the functioning of the peripheral motor unit mechanisms follows automatically and each motor unit functions "all-or-none." The activity in the muscle also, therefore, is an automatic result of the level of excitation built up at the synapses of the anterior horn cells.

The specific techniques of facilitation for maximal voluntary motion in neuromuscular reeducation include: (1) Maximal resistance. (2) Proprioceptive and other reflexes. (3) Mass movement patterns. (4) Reversal of antagonists. (5) Rhythmic stabilization.

1. *Maximal resistance.* When a voluntary motion is carried out against resistance, the voluntary effort of the patient to move is opposed by force acting in the opposite direction. Maximal resistance for isotonic contraction is the application of an opposing force which is almost equal to, but slightly less than, the power of the motion, so that with the greatest possible exertion, the patient does succeed in carrying out the motion through as much range as possible. For maximal isometric contraction, the resistance applied is slightly greater than the power of the muscle, so that the muscle slowly lengthens as the patient holds a position as strongly as he can against the resistance of the therapist.

The greatest flexibility in application of resistive exercise in neuromuscular reeducation for paralysis is afforded by application of resistance by a physical therapist in individual treatment. The therapist can

vary the resistance through the range of motion, if power of the voluntary motion varies in different parts of the range, exactly as needed to maintain a maximal contraction throughout the range. The therapist can also combine other facilitating techniques with resistance in order to obtain more effective treatment of severely paralyzed and zero muscles. The therapist can also assist the patient to increase active range of motion by taking the joint beyond his active range and having him make a maximal isometric contraction. The therapist also develops a close personal relationship with the patient whom she treats daily and can elicit greater effort, concentration and cooperation. The therapist can not only apply resistance for greater motor response in elementary motions, but can also accelerate training of essential patterns such as standing balance, sitting balance, and balance on crutches, by applying maximal resistance in these more complex patterns.

Maximal resistance can also be applied in other ways including carrying out of the motion against gravity if that particular resistance approximately equals the power of the paralyzed muscle. Similarly for more paralyzed muscles, motion with gravity eliminated may result in maximal contraction. Application of weights including dumbbells or boots is another method of applying maximal resistance. Use of pulleys with varying weights can also be applied for this purpose. For resistive exercise for the fingers and thumb, a glove can be used with the resistance applied in the form of rubber bands of the correct tension to produce the maximal response. These techniques are more limited than application of resistive exercise in individual treatment by a physical therapist, but are valuable in supplementing the treatment and in treatment of muscles in which the paralysis is not extreme. These techniques can not be applied effectively for severely paralyzed or zero muscles. With these techniques the actual resistance changes as the motion proceeds. In abducting the arm with a dumbbell, for example, the resistance is zero with the arm at the side in the sitting position and, as the arm abducts, the resistance increases to 90 degrees of abduction. Similarly, the resistance changes as the motion proceeds in use of pulleys, because the angle of pull changes with the joint motion.

In our treatment program each patient is given an intensive prescribed gymnasium program for develop-

ment of power and endurance in elementary motions using gravity, weights, pulleys, and the like, for maximal resistance. In addition, resistance is applied in complex patterns of activity as, for example, in mat work where the patient is required to sit up, roll over, or do push ups. Similarly, restrictive techniques of therapeutic exercise are applied in complex activities in occupational therapy using friction in wood working and other crafts, working against weight in developing patterns for self care, such as feeding, and working against resistance in gardening.

The mechanism by which resistance increases the power of muscular contraction and the proportion of active motor units is apparently related to tension in the muscle. When the muscle contracts with strong resistance, the tension in the muscle is increased and proprioceptive stimulation resulting from the increased tension facilitates the voluntary motor mechanism. Gellhorn⁹ demonstrated in monkeys that the muscular contraction in response to stimulation of the motor cortex was greatly increased in that muscle through proprioceptive stimulation by the increased tension resulting from strong resistance or stretching. He also showed that subthreshold stimulation of the motor cortex can result in contraction of a stretched resisted muscle by summation of the weak cortical stimulus with stronger proprioceptive facilitation. Another less significant factor in the mechanism of facilitation through resistance is stimulation of pressure sensation at the point at which resistance is applied, as in manual resistance by the therapist. Even in isolated muscle, greater tension increases the response, but this is a relatively unimportant factor in voluntary motion.

2. *Proprioceptive and other reflexes.* Placing a paralyzed muscle under greater tension by stretching will facilitate the voluntary contraction of that muscle. The mechanism is similar to the proprioceptive facilitation described in the discussion on resistance. This technique is always applied in combination with maximal resistance. By placing the paralyzed muscle in the lengthened position and applying maximal resistance, the therapist can frequently succeed in obtaining voluntary contraction against resistance, even in zero muscles. In other words, the severely paralyzed muscle fails to respond at all in free or assisted motion in the neutral position, whereas the facilitation provided by proprioceptive stimulation is sufficient to discharge some of the motor units. Stretching of the muscle can sometimes be accomplished by a change in position of the body; for example, voluntary contraction of the paralyzed hamstrings for knee flexion is markedly facilitated in the sitting position

when the hamstring muscles are stretched, as compared to contraction of the same muscles in the supine or prone position. Sudden stretching of a paralyzed muscle by initiating a stretch reflex and strongly stimulating the proprioceptors, may be more effective than gradual stretching in facilitating voluntary motion in severely paralyzed muscles. Facilitation from proprioceptive stimulation can also be summated with other techniques of facilitation for greater response.

Not only is stretching effective in facilitating contraction in the stretched muscle but stretch of another muscle which is part of the same mass movement pattern can also produce proprioceptive facilitation of a paralyzed muscle. For example, voluntary contraction of the iliopsoas muscle can be facilitated, not only by stretching of the iliopsoas but also by stretch of the anterior tibial muscle which is associated with the iliopsoas in a total flexion pattern of the lower extremity. Gellhorn⁹ also demonstrated this phenomenon in studies of electrical stimulation of the motor cortex in monkeys.

Other reflexes can also facilitate voluntary motion. An example of a postural reflex is the tonic neck reflex of Magnus in which rotation of the head results in extension of the upper extremity on the side to which the face is turned and flexion on the opposite side. This reflex, when exaggerated, can be used to facilitate maximal voluntary motion against resistance.

In patients with lesions of the corticospinal tract, the Von Becterev reflex which is a variant of the Babinski reflex, is hyperactive. The passive flexion of the big toe results in a mass flexion reflex involving all joints of the lower extremity. Moderate stimulation of the reflex will facilitate voluntary contraction of the flexor muscles of the hip, knee or ankle and still allow voluntary control of the motion with the ability to contract and relax the muscles at will. This is sometimes useful in initiating voluntary contraction in zero flexor muscles in the lower extremity in patients with upper motor neuron lesions. The after-discharge period of the reflex can also be used to facilitate voluntary contraction of the flexor muscles. After repetition of this procedure over a period of time, voluntary contraction of the flexor muscles can be initiated and carried out without the stimulation of the reflex.

By a similar technique, the gag reflex can be utilized to facilitate voluntary contraction of the soft palate and pharyngeal muscles. Resistance cannot be applied in this technique. However, by weak stimulation of the gag reflex simultaneously with strong vol-

untary effort in contraction of the soft palate such as saying "Ah" loudly, it has been possible to develop through the facilitation of the reflex, voluntary contraction in completely or severely paralyzed palate and pharyngeal muscles.

3. *Mass movement patterns.* Primitive patterns of motion in which combinations of motions are associated in a more complex pattern are present in infants. These patterns are used in normal activity, in work and sports, such as throwing a ball, kicking a football, chopping wood, using a shovel, or swimming. An example of such associated movements in a mass movement pattern is: extension, adduction, internal rotation of the shoulder, extension of the elbow, pronation and ulnar flexion of the wrist. This natural movement pattern is used in throwing a ball. An example of a mass movement pattern in the lower extremity is: flexion, adduction, external rotation of the hip, flexion of the knee, dorsiflexion, inversion of the ankle and extension of the toes. An example of a mass movement pattern of the neck and trunk is: flexion, lateral motion and rotation of the neck and upper trunk to the right, with extension, adduction, internal rotation of the left shoulder in a motion of rolling over to the right from the supine position.

Mass movement patterns are instinctive natural pathways in the central nervous system and are not learned. The synaptic resistance in these pathways is small. From extensive observation, it is apparent that the fundamental mass movement patterns are all diagonal movements rather than straight movements. For example, in the hip, the natural patterns are: flexion, adduction, external rotation and their antagonists: extension, abduction, internal rotation of the hip. It appears likely that these patterns are the fundamental elementary motions and that straight motions such as flexion, extension, abduction and adduction are derived from the fundamental diagonal patterns. As an example, straight flexion of the hip would be derived from a combination of flexion adduction and flexion abduction of the hip.

Stimulation of the premotor cortex in man results in so-called adverse movements which are primitive diagonal mass movement patterns. Gellhorn⁹ has shown in monkeys that stimulation of the motor cortex produces a primary contraction of the triceps and an associated secondary contraction of the flexor carpi. Such functional associations of synergic motions are parts of mass movement patterns. He has demonstrated that the motor points for these associated muscles are adjacent on the surface of the cortex. As has been pointed out previously, proprioceptive stimulation of a muscle in the mass movement pattern

facilitates contraction of other component motions of the pattern.

From extensive observations on a large number of patients with neuromuscular disorders, it is apparent that even in patients with severe paralysis from various lesions as of the corticospinal tracts, anterior horn cells or cerebellum, the mass movement patterns are still intact and undisturbed. The patterns are also present in patients with Parkinson's disease. Of all types of paralysis studied, the only patients who showed disturbance and disruption of the natural mass movement patterns were those with athetosis from lesions in the basal ganglia. Since marked damage to both corticospinal tracts leaves the fundamental mass movement patterns intact despite very severe paralysis, and since the patterns only appear to be disturbed in patients with athetosis, it is reasonable to assume that the basal ganglia have a decisive influence in the mechanism of the mass movement patterns and the general impression that these patterns are extrapyramidal in nature is confirmed.

Definite facilitation of voluntary motion, resulting in a greater response against maximal resistance, is obtained in voluntary motion in a mass movement pattern as compared to elementary straight motions. If, for example, the anterior tibial muscle is severely paralyzed but hip flexion and adduction and knee flexion are less severely involved, it is found routinely that maximal contraction of the hip and knee muscles in the natural mass movement pattern of flexion, adduction, external rotation of the hip, flexion of the knee, and the like, results in overflow to the anterior tibial muscle which can then contract much more strongly against resistance. In other words, the quantity of energy discharged in a mass movement pattern will determine the excitation built up at synapses of a severely paralyzed component motion of the pattern. This principle may be applied in a combination of mass movement patterns. For example, if the left lower extremity is much stronger than the right, combined asymmetrical mass movement flexion patterns of both lower extremities and of the lower trunk will produce a greater response in the more paralyzed muscles of the right lower extremity because the total energy in the pattern is greater than if only the right lower extremity pattern were excited. Similarly, if the upper extremities are relatively uninvolved compared to the lower extremities, flexion, adduction and internal rotation of the left shoulder against resistance will facilitate flexion and adduction of the paralyzed right hip muscles against resistance. Mass movement patterns of the upper extremities can be combined bilaterally symmetrically, as well as bilaterally asymmetrically,

and similarly for the lower extremities. Facilitation of voluntary motion through mass movement patterns can also be summated with proprioception and other facilitating mechanisms for greater response. In addition to facilitation of voluntary motion, maximal stimulation of mass movement patterns against resistance results in marked and prolonged relaxation of spasticity, muscle spasm or Parkinsonian rigidity. The basis of this relaxation is apparently the strong activation of inhibitory mechanisms for muscle tonus through excitation of mass movement patterns. Furthermore, it has been found that training of mass movement patterns in patients with athetosis in which the patterns are disturbed, results in a marked decrease in voluntary motion and improvement in voluntary control of the affected motions.

4. *Reversal of antagonists.*

A. Quick reversal of antagonists. In this technique of facilitation of voluntary motion, the antagonistic motion is performed isotonically slowly against maximal resistance and then suddenly the motion is reversed and the agonist is contracted and assisted as rapidly as possible to the shortened position of the muscle, following which the agonist is contracted isometrically in the shortened position against maximal resistance. Quick reversal of antagonists is evident in normal activity such as chopping wood, the boxer's punch, the golf swing, the farmer using the scythe, or the football kick. This method of facilitation summates with mass movement patterns for greater response. It is also useful following immediately after rhythmic stabilization.

The fundamental mechanism of facilitation through quick reversal of antagonists was demonstrated years ago by Sherrington and termed "successive induction."¹ The maximal excitation of the antagonist is followed immediately by strong facilitation of excitation of the agonist. The facilitating effect of successive induction is demonstrable not only in voluntary motion but also in simple reflexes in a spinal animal; the stimulation of the flexion reflex strongly facilitates an antagonistic extension reflex in the same limb immediately afterward.

The specific technique of quick reversal of antagonists is particularly valuable in facilitating maximal contraction in the shortened range of motion and is therefore effective in increasing active range of motion. It is also beneficial in increasing endurance. A major factor in cerebellar asynergia is deficiency in power and duration of isometric contraction. In patients with cerebellar involvement, therefore, quick reversal of antagonists is a very useful technique, since it results in marked facilitation of isometric contraction.

B. Slow reversal of antagonists. Slow reversal of antagonists is another technique based on successive induction. In this method the antagonist motion is carried out isometrically slowly against maximal resistance and immediately afterward the agonist is contracted slowly isotonically against maximal resistance. The maximal excitation of the antagonist facilitates the voluntary contraction of the agonist against resistance. In this method the facilitation of isotonic contraction is favored. This technique is valuable in conditions such as Parkinson's disease where the primary deficiency is initiation and performance of isotonic contraction. This method is used routinely with mass movement patterns and can be carried out immediately after rhythmic stabilization of greater response. Slow reversal of antagonists is useful in patients with spasticity in facilitating voluntary motion and decreasing spasticity, whereas quick reversal of antagonists would not be applicable because of the block presented by the spasticity in carrying a quick reversal through the range of motion. Slow reversal of antagonists is also useful in facilitating motion which is associated with pain from muscle spasm whereas quick reversal is contraindicated because of the danger that sudden stretching will aggravate the pain.

5. *Rhythmic stabilization.* In this technique, the patient attempts to hold a rigid position of a joint and the therapist alternately and rhythmically applies maximal resistance in one plane, first in one direction and then in the opposite direction in an attempt to move the joint. As an example, the patient holds the wrist rigid in the neutral position and the therapist alternately and rhythmically applies resistance to the radial extensor, then the ulnar flexor, then the radial extensor, and so on. The patient is alternating isometric contractions of the antagonist muscles and as the procedure is continued, the power of the isometrically contracting muscles increases, following which maximal isotonic contraction of the agonist is performed against resistance. This technique of facilitation is combined with mass movement patterns and proprioception for greater response. Also, as a rule, immediately after rhythmic stabilization, quick reversal of antagonists or slow reversal of antagonists is carried out, thereby further increasing the facilitating effect. Rhythmic stabilization not only strongly facilitates voluntary contraction of paralyzed muscles but also effectively inhibits spasticity, muscle spasm or rigidity.

This method also utilizes the principle of successive induction but instead of alternating isotonic contraction there is repeated alternation of the iso-

metric contraction of the antagonist muscles. Patients with many different types of paralysis resulting from lesions of the corticospinal tracts, basal ganglia (including Parkinson's disease and athetosis) and lower motor neurons, responded remarkably well to this technique of facilitation of voluntary motion. On the other hand, patients with even a slight degree of cerebellar involvement failed to show facilitation from this method or even failed to perform rhythmic stabilization successfully. Patients with combined lesions of other motor mechanisms and of the cerebellum also failed to respond to rhythmic stabilization. In fact, rhythmic stabilization is a sensitive test of cerebellar function. Since patients with various types of paralysis from lesions of different motor centers and pathways all were successful in rhythmic stabilization and showed facilitation from this method, while only patients with involvement of the cerebellum showed a deficiency in rhythmic stabilization, it became apparent that the cerebellum is probably an essential part of the central mechanism for rhythmic stabilization. In other words, just as the extrapyramidal system is activated through use of mass movement patterns, the cerebellar system is excited through rhythmic stabilization and acts as a facilitating mechanism.

Neurologic Implications

A careful study of a large number of patients with cerebellar diseases from multiple sclerosis or familial cerebellar ataxia revealed that the asynergia and the disability correlated closely with the deficiency in carrying out rhythmic stabilization but failed to correlate at all with the degree of paralysis of the muscles. It soon became apparent that the intention tremor, hypotonia, dysmetria, rebound and marked fatigability in these cases were related fundamentally to a deficiency in power, range, and particularly endurance of isometric voluntary contraction of individual muscles. The inability to perform rhythmic stabilization by alternating isometric contraction of antagonists was related to a more basic deficiency of isometric contraction of each antagonist individually. Isotonic voluntary contraction was involved much less, if at all. This hypothesis has been tested by treating patients with the cerebellar syndrome by developing the power, range and duration of isometric contraction of the affected muscles. For this purpose, the quick reversal technique, combined with mass movement patterns against maximal resistance was particularly effective. It has been possible to demonstrate that this procedure improves and may in some cases completely eliminate the cerebellar syndrome and its attendant disability. As the deficiency in isometric contraction improved, the ability to perform

rhythmic stabilization also improved and the whole syndrome of asynergia, including intention tremor, dysmetria, rebound, hypotonia and fatigability, was benefited concomitantly. It should be pointed out that this is the first effective therapy developed for the cerebellar syndrome and also the first time that isometric contraction has been implicated as the basic deficiency involved.^{1 10 11} From these observations, it is reasonable to set up the hypothesis that the fundamental function of the cerebellar hemisphere is to facilitate voluntary isometric muscular contraction.

The function of the corticospinal mechanism appears to be initiation of voluntary motion and inhibition of spasticity. Spasticity is dependent on the stretch reflex and facilitating postural mechanisms in the reticular formation and vestibular nuclei.¹² It has been pointed out earlier that the basic patterns of voluntary motion are the mass movement patterns. The integrity of the neostriatum (caudate nucleus and putamen) appears to be essential for the proper functioning of the mass movement patterns which are disturbed in athetosis but not in any other type of paralysis. It appears therefore that normally the corticospinal system functions together with the extrapyramidal mechanism of the mass movement patterns in the performance of voluntary motion.

An analysis of Parkinson's disease suggests the possibility that the affected area in the basal ganglia, the paleostriatum (globus pallidus and substantia nigra), has the fundamental function of facilitating isotonic voluntary muscular contraction. It will be recalled that there is evidence that the cerebellum has the opposite effect of facilitating voluntary isometric contraction. The deficiency in Parkinson's disease, appears to be related to weakness, slowness, fatigability, lack of range and difficulty in initiating isotonic voluntary motion. Isometric contraction is carried out much more strongly and rhythmic stabilization is performed effectively. Improvement in voluntary isotonic contraction through application of mass movement patterns, rhythmic stabilization and slow reversal of antagonists, has significantly improved the disability and has been accompanied by striking improvement in rigidity in Parkinson's disease.

Summary

1. A discussion of the rationale of treatment for restoration of motor function in poliomyelitis indicates the importance of the following factors: hypertrophy, preventing disuse, development of correct motor patterns, fatigue, dormant motor neurons and muscle spasm.
2. An analysis of the physiology of the peripheral

neuromuscular mechanism of "motor units" indicates that it is essential to strive for maximal voluntary contraction of the paralyzed muscle for effective neuromuscular reeducation.

3. A discussion of the factors involved in treatment of upper motor neuron paralysis indicates that maximal activation of the voluntary motion is also an essential objective for effective treatment.
4. An analysis of the physiology of the central motor mechanisms involved in voluntary motions which control the excitation of the motor units shows the importance of understanding the complex inter-relationships of different centers at various levels. It is also apparent that the summation of facilitation in the motor centers is the most important factor in neuromuscular reeducation for treatment of paralysis.
5. The specific techniques for facilitation of voluntary motion which have been developed for more effective treatment of paralysis include: maximal resistance, proprioceptive and other reflexes, mass movement patterns, reversal of antagonists and rhythmic stabilization. These methods are routinely used in combination for summation of the facilitating effect.
6. On the basis of observation of a large number of patients with a variety of lesions of the central nervous system undergoing neuromuscular reeducation, evidence has been accumulated to support the following hypotheses:
 - a. The corticospinal system initiates voluntary motion.
 - b. The cerebellar hemispheres facilitate voluntary isometric muscular contraction.
 - c. The paleostriatum facilitates voluntary isotonic muscular contraction.
 - d. The neostriatum is responsible for the integrity of mass movement patterns.

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THE DYNAMICS OF REHABILITATION

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To many the word "rehabilitation" often is associated with the casualties of battle. And, of course, it is true that wars cripple and disable tens of thousands who will need to be rehabilitated. But—stop and look around you—you will see the kid with poliomyelitis, the college freshman with epilepsy, the truck driver with arthritis, the tuberculous tailor and the hemiplegic grocer, the bookkeeper with an amputated limb, the alcoholic salesman, the man of forty-four with a cardiac condition, the psychoneurotic lawyer, the blind and the deaf and the mentally defective—nearly all likely candidates for rehabilitation.

Most of these men and women will be groping their way out of a maze of despondency; quite a few will be struggling to make marginal livelihoods; while only a small handful will be working on jobs which make full use of their interests and capacities. It is safe to say, however, that a large percentage of these handicapped will have given up the fight and slipped into a state of apathy and unproductivity.

It is always a vital problem for the disabled person to overcome his handicaps and make the best use of his residual and latent abilities. To do this, certainly, means much to him and to his family. It also means much to his community and country. Even in times of peace and security it has been a major national problem to employ all our human resources. But in times of emergency and war the full use of our man-power is of the greatest importance. One vast pool of labor—only slightly tapped—awaits further development. This is the reservoir of the medically and psychologically disabled.

A large part of the responsibility for this immense salvage project rests upon the rehabilitation specialists. To a great extent this responsibility can be fulfilled if—in addition to making early diagnoses and corrections, providing integrated and continuous services, recognizing and attempting to reach the rehabilitation potentials of the disabled—the specialists make strong efforts to remain plastic and grow professionally. For outstanding work one needs constantly to replenish his store of information, to develop new abilities, to perfect established skills and techniques, and to become adept in working with related

specialists. Also, therapists must not only know anatomy, physiology, kinesiology and the various modalities but also the functions of social workers, psychiatrists and psychologists.

As a psychologist working in a rehabilitation program, it would be difficult to avoid this opportunity of presenting some observations and opinions pertinent to rehabilitation.

Those who work with patients are bound to accumulate a variety of experience. Sometimes we wonder about the meaning of our experience. This is a good sign. The mere act of analyzing one's clinical experience to identify the main currents, for example, which drive on a bilateral amputee to relearn walking or sustain an aphasic to relearn talking can be of great benefit both to the therapist directly and to his patients indirectly. Efforts to clarify the dynamics of rehabilitation can lead to better understanding of the process of rehabilitation and actually facilitate the forward movement of a program.

Each of us lives in two worlds; the inner world of sensations, thoughts and feelings; and the outer world of people, objects and situations. A well-integrated person learns to live with himself and with others. This kind of integration, in fact, is one of the purposes of rehabilitation. Rehabilitation is a reciprocal process in which internal adjustment depends, to some extent, on external forces, and external adjustment depends on the stability of the inner forces. When both inner and outer forces unite to work toward an objective which the patient desires, the rehabilitation process is taking place.²

The forces from the outside acting upon the disabled person often can make or break his program. For example, the feelings and attitudes of those treating patients can produce in the disabled person feelings either of helplessness or hopefulness, belligerency or cooperation, depression or cheerfulness. A vibrant yet realistic therapist can perform miracles. Above all, therapists need to know and believe that the crippled need not be condemned to useless lives; that when properly treated, trained and placed the disabled are as productive as the nondisabled. One cannot stress too strongly the importance of such a positive and informative approach, from the very

¹Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are a result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

²Manson, Morse P., The Concept of Rehabilitation Applied to Paraplegia, *Arch. Indust. Hyg. & Occup. Med.*, Jan. 1950 65-72.

first contact, in the relationships between the patient and therapist.

Another external force is the conduct of society toward the disabled person. Such behavior will determine the attitude of the disabled person toward society. There still are some people who look upon the halt and the lame as freaks to be tormented. Children can be very cruel to the crippled or abnormal child unfortunately placed in their midst. Others look upon the disabled as parasites upon the commonwealth and even suggest that they be disposed of, by humane means, they will add. Occasionally senile persons are humiliated and abused by thoughtless adults. In addition to acts of cruelty by some, others go to the extreme and gush with puerile sentimentality that can be more painful to the disabled person than cold ridicule.

Thus it follows that the disabled often form bitter opinions concerning the intelligence and sensitivity of the nondisabled. Such harsh feelings are not desirable. Since the disabled person, if he is to be fully rehabilitated, must become a friendly and active member of society, he often needs programs of socialization to understand and accept his fellow citizens and neighbors, with or without shortcomings. Usually, the disabled person will be only too ready to admit that he has faults.

Socialization can be encouraged by recreational and vocational activities. Activity stimulates more activity. And the result is a release of strong feeling and tensions. Work and play are socializing experiences needed both by the disabled and the nondisabled. It is advisable, whenever possible, to include the disabled in most group activities. Through such participation both the disabled and the nondisabled will discover their many fallacious beliefs about each other and learn that socialization leads to understanding, tolerance and cooperation.

The day is past when a disabled person is considered to be one who needs only an artificial limb or plastic surgery or a brace. Today the emphasis is placed upon *all* of the disabled person rather than on his disability. It is the whole person who is treated and not the leg or the lung. With the recognition of the role played by emotional factors in disease, the modern therapist knows he is dealing with a complex personality rather than with spasms or a frozen shoulder. That is why therapists are interested in *everything* about their patients, such as their home environments, educational backgrounds, parental relationships, early childhood experiences, marital adjustments, work histories, intelligence, motivation, and physical conditions.

To obtain such a vast amount of information requires time. The alert therapist makes time for his patients. When patients have time to talk freely they speak of many things, some closely related to their disability, others—on the surface—only remotely related to their trouble. But essentially they will talk of those things which mean the most to them at the time. If one knows how to listen, he will see his patient in three dimensions—emerging from the past, living in the present, and growing into the future—and recognize the many problems of the patient beside his disability which impinge upon his return to health. When the pressures generated by these additional problems are relieved, the disabled condition often improves. This is one of the fundamentals in psychosomatic medicine and in psychotherapy.

So far this discussion has dealt chiefly with several external forces observed to operate in the rehabilitation process. What are some of the inner forces which make rehabilitation possible?

Before a disabled person can carry through a comprehensive program of rehabilitation he must have a strong desire to live in the present and plan for the future. A patient deep in depression or self-pity makes no plans; he is too busy exploring and dissecting his feelings of remorse and blame. These feelings are tied up with his past. Apparently he believes either there is no future for him or that it is likely to be filled with additional pain and grief. Such a person dreams and fantasies of the long-lost days prior to his disability, trying desperately to deny his present condition and regain the days of long-ago. Obviously, he is not ready for the full impact of a total-push program. He is a proper subject for a specialized phase of rehabilitation—psychotherapy.

One of the goals of such therapy should be the recognition by the patient of his injury, with all its implications, and especially its tie-in with his work possibilities. The acceptance by the patient of himself as he is *today* is a basic requirement before realistic planning can take place.

When this is done and the patient shows a desire to prepare for a participating and productive way of life, and regains his interests in continuing his pursuit of happiness, he will profit most from efforts devoted to him. A good sign of readiness for mature growth is honest self-acceptance.

Man is a biosocial animal in a constant state of flux. To keep body cells alive calls for thousands of chemicophysico-electrical changes within the organism. But man does more, however, than digest food and burn glucose; he also votes and plays canasta, he enjoys gossip and off-trail stories with his friends.

THE DYNAMICS OF REHABILITATION

When man responds to his physiological and social drives he is making changes which satisfy his needs and ease his pressures. These pressures, to some extent, are with him most of the time. And every day is one full of activity and change.

Rehabilitation is a series of changes; rehabilitation seeks to produce and encourage those changes which are goal-directed. It is a selective process which kindles the faint sparks of hope into an arising flame which lights the way to a maximum recovery.

Psychologists often make forecasts regarding the potentials of patients. Now and then such predictions do not take place. Sometimes, what seem to be clear-cut cases develop surprise endings, like paraplegics becoming engineers or stutterers becoming speech pathologists or alcoholics working as psychotherapists. Within the experience of every rehabilitation worker there is a case or two which seemed destined to a life of vegetation. Yet, something happened. The patient caught fire and moved on to do the impossible.

Many changes can and do take place in disabled persons. No one can predict all the possible changes which may occur. Frankly, what a disabled person can or cannot do is an unknown quantity. It is wise to be cautious, but it is somewhat naive to believe that a disabled person ever has reached his limits. There is always a little bit more he can do, and frequently a surprising amount more than any one suspected.

The terms crippled, disabled and handicapped are generic terms applied loosely to a group which has perhaps only one or two characteristics in common. It sometimes happens that these terms are used in such ways as to make the listener believe that *all* disabled persons have the same constellation of traits or are all of the same "type." One hears frequently of "NP" cases. This is a common stereotype glibly used even by professional workers. Just what are "NP" cases? Are they all psychotic or all neurotic or all psychological or all what? Suppose they were all psychotic? Would they all be organic or functional cases, all schizophrenic or all manic depressive? Has any psychiatrist ever seen two psychotics or two neurotics or two "normal" individuals who could be called mirror images of each other? The answer, as you know is "no!"

Each disabled person, whether amputee, epileptic, alcoholic or hemiplegic is the only one of his kind. He is a unique personality. This suggests that he must be studied and understood as a unique individual, and his program of treatment and rehabilitation designed around *him* and not made to conform to rigid preconceived patterns. This also implies that

each disabled person will have his own rate of growth, adjustment and rehabilitation. His aspirations and interests will find devious channels of expression — quite different from what you, the therapist, had planned or hoped. Each patient will reveal his personality in every thing he does. Do not be surprised if his performance is not what you had expected of him. Ultimately, the patient will set his own pace and his own goals. This is as it should be.

It seems clear that therapists should be aware of individual differences and make use of their knowledge in improving their techniques and skills for carrying along rehabilitation efforts. Embarrassing comparisons of patient with patient should be avoided, encouraging comparisons of the patient's own earlier and later accomplishments might be used fruitfully.

The concept of individual difference is well established in text-books of psychology. It is another matter to translate this principle of the uniqueness of the individual into meaningful and integrated action by teams of therapists.

In summary, brief comments have been made of three external forces and three internal forces frequently observed to be operating in the rehabilitation process. These forces were:

1. Positive attitudes of rehabilitation workers.
2. Socializing experience for the disabled person.
3. Treatment of the total personality rather than the disability.
4. Self-acceptance by the disabled person.
5. Constant change and growth which is difficult to predict.
6. Uniqueness of personality.

DR. RICHARD KOVACS

The Association deeply regrets the untimely passing of Dr. Richard Kovacs. Dr. Kovacs was an inspiration in the development of our Association and encouraged us with timely advice in the practice of our profession. He served untiringly on our Editorial Board. His passing will be a loss to us.—Ed.

The President Speaks

The Fifth Clinical and Scientific Convention of our Association, to be held at the Hollywood Roosevelt Hotel in Los Angeles on the 3rd, 4th, 5th, and 6th of July, will soon be a reality. Now is the time to make plans to attend this meeting.

The Convention Committee, under the direction of Mr. Burr S. Zachary, Chief of Corrective Therapy at the Neuro-Psychiatric Hospital in West Los Angeles, has been diligently organizing committees and preparing the facilities and program for what we hope will be one of the finest conventions held by our Association. Mr. Philip West, Chief of Corrective Therapy at Cedars of Lebanon Hospital in Los Angeles and Chairman for the Clinical Sessions, has been very active in contacting speakers and arranging final plans for that phase of the program.

The setting for this year's convention was carefully selected with consideration for the interests of all delegates who may or may not have visited California previously. Hollywood is centrally located so that a trip to the Pacific Ocean or to the mountains overlooking the expanse of Southern California is only a few minutes away. There are many points of interest that you, as a visiting delegate, will want to see. Full possession of pamphlets, booklets and maps giving all the necessary information will be yours.

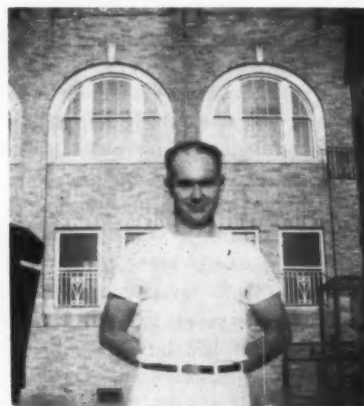
The Hollywood Roosevelt is in itself a Hotel of unique distinction. The new million dollar annex with its spacious patio and swimming pool presents a natural beauty spot for our meeting and an ideal location for a few leisure days before starting homeward. Mr. Newman Tucker, Public Relations Manager of the Hotel, has been extremely enthusiastic and helpful, as has the Los Angeles Chamber of Commerce, toward preparations to make this convention a successful and enjoyable one.

As President of your Association I would like to impress upon the members the importance of our conventions. They are milestones on the road to professional success. Those areas that have been fortunate enough to have had the convention on previous occasions will appreciate my remarks in regard to the values gained by the host city in addition to the contribution afforded those who attend from all parts of the country. These conventions consume many hours in organization and planning. However, the satisfaction that comes with achievement of the final objective is beyond compare. Many values are derived in that an opportunity is given for an exchange of ideas that will lead to additional professional growth and development, old friends enjoy a few hours reminiscing in fellowship and new friends join the ever growing professional circle. As the delegates return to their respective homes, they will convey new ideas and a healthy professional attitude to their co-workers who are unable to attend the meeting. For those who remain in the convention area, there is an enrichment of experience in organizing, planning, and conducting such a conclave. Within the host community and area there grows an awareness of an organization which is working for the betterment in treatment of the disabled.

This year's meeting will follow the plan of previous meetings in that other specialties of Rehabilitation will be invited to attend the Scientific and Clinical Sessions and participate in special sessions being planned for their respective groups. The emphasis placed on this function last year was one of the highlights of the Memphis convention. It fosters a feeling of cooperativeness and a unity of purpose in the treatment of the patient through rehabilitation.

For the active members and the policy making group there will be problems to consider that will require immediate solution and others that will necessitate long range planning. These considerations will be vital not only to our Association but to the entire field of Rehabilitation. The 1951 Convention is one meeting that you will not want to miss!

We Introduce — Our Treasurer



Richard Fowler

Mr. Richard Fowler received his Bachelor of Science Degree with a Major in Physical Education from the Kansas State University. As an undergraduate he played varsity football, tennis and wrestling. In 1934, Dick was the Missouri Valley A.A.U. welterweight Champion. Upon graduation he coached and taught at Western Kansas.

During the war years, Mr. Fowler spent 18 months as a combat infantryman in Europe and one year in Physical Reconditioning. Upon discharge from the army Mr. Fowler enrolled for graduate work in the field of Corrective Physical Education at the University of Southern California. At present, Mr. Fowler is the Assistant Chief of Corrective Therapy at Wadsworth General Veterans Administration hospital.

Mr. Fowler has been a member of the Association for Physical and Mental Rehabilitation for the past few years. His active work was recognized and at the last convention held in Memphis, Tennessee, he was elected treasurer. He is sincere, conscientious and we are certain that he will serve the Association well. We are all grateful that we have a man of Mr. Fowler's calibre as treasurer of our Association.

THE THERAPEUTIC VALUE OF THE PUNCHING BAG IN PHYSICAL AND MENTAL REHABILITATION

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Introduction. The therapeutic value of certain exercise apparatus in a medical gymnasium is often overlooked. An exceptionally interesting piece of equipment, potentially useful, but comparatively little employed, is the punching bag. It is readily available, is not expensive, and the overhead platform drum is easily constructed.

Prescription of Punching Bag Exercises. In a physical medicine rehabilitation service, punching bag exercises should be medically prescribed just as carefully as any other prescription. There should be a specific purpose as well as a scientific basis for its use. The proper indications with a full awareness not only of its possibilities but also of its dangers, in certain pathological conditions, should be stressed.

In any exercise program the monotony and boredom of the routine prescription should be avoided. This factor is part of the overall problem of the need for motivation. In rehabilitation, motivating patients to activity often presents a difficult challenge to the therapist. Fundamentally, the essence of motivation is to stimulate interest in recovery. One of the effective physical methods of arousing interest is by the use of the punching bag.

Objective. The main theme of this paper relates to the specific therapeutic benefits derived from this form of corrective therapy. In addition to the specific benefits there are other factors which augment the therapeutic procedure. Not only is interest in recovery stimulated but this activity also increases self-respect by virtue of observable progressive accomplishment with resultant increase in personal happiness. A threefold effect ensues: (1) Improvement of the specific pathologic condition as a result of the punching bag activity, (2) The acquisition of

a permanent skill which reinforces confidence in the general ability to act constructively, (3) Increased confidence in one's ability to cope with most emergency physical conflicts.

These observations (although they cover years of experience in the general and therapeutic use of this modality) are still of a preliminary nature and attempt only to stress the possibilities latent in this too little employed but highly effective form of therapy. Also, it should be understood that, at best, the use of this equipment is only an adjunct to the treatment of the surgeon, the orthopedist, and the physical and occupational therapists.

Value of and Types of Exercises. Coordination, rhythm and reciprocal motion are essential factors in the normal functioning of a human organism. In some physical disabilities the problem of reestablishing coordination is most important. In certain conditions that were treated, we were able to aid the patient in regaining an appreciable measure of lost coordination and rhythm. Punching the bag is ideally suited for this purpose because coordination and rhythm are fundamental to this activity. Few gymnasium activities require a greater synergistic action of muscles. Rhythmic mental responses foster the element of awareness, aid in re-establishing the reflex arc and combat what may be a very disabling "mental alienation" or psychological block to muscle activity. Rhythmic stimulation results in a pleasant sensation and the kinetic activity engenders a feeling of invigoration.

Many experts in physical education are enthusiastic about the possibilities of the light punching bag as a physical conditioner. It has proved to be not only an excellent exercise in general but we have found it useful in strengthening some localized traumatic and diseased areas.

All punching bag exercises should progress from the simple activity to the more complex. In such a type of exercise prescription there is often the additional problem of teaching the patient to strike the bag in a manner which would benefit his particular condition. The following basic exercises are representative of the ones we found most effective.

A. Straight Punching Exercise. This is a direct forward movement on the horizontal plane straight from

Note: Orthopedic aspects of this article reprinted from the Journal of Bone and Joint Surgery, July, 1950.

Acknowledgment is hereby made to the Journal of Bone and Joint Surgery for their permission to reprint this article which appeared in the July 1950 issue of the Journal.

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the shoulder. In striking the bag, regardless of the exercise, the principle is the same, i.e., first strike the bag just below its center and then wait for the bag to carom off the punching bag drum or overhead platform keeping the hand in a position preparatory to striking the bag as it returns to a central point beneath the platform. This simple activity involves a synergistic action of the whole upper extremity. The major muscles involved include the deltoids, triceps, biceps, levator scapulae, trapezius, serratus anterior, the pectorals, and the muscles of the back and the forearm.

b. *Hooking the Bag.* This exercise is performed in a lateral plane bringing the forearm across the chest with elbows flexed at 90°.

c. *Combination Straight and Side Punching.* This movement is started on the horizontal plane similar to exercise one and then is completed by extending the 90° flexed forearm striking the inflated pear-shaped leather in the oblique plane.

d. *Rotary Tattoo Punching.* From a position midway between pronation and supination, the wrists and hands revolve over each other with the elbows flexed at 90° while striking the bag.

These exercises illustrate a few of the simpler methods of striking the bag but there are a number of other exercises which are routine or can be improvised. Some of these maneuvers are used or contraindicated in certain specific conditions mentioned later.

Shoulder and Elbow Injuries. Carefully selected shoulder cases have been treated through the medium of this device. The shoulder girdle is especially amenable to such treatment. After the acute stage in bursitis is passed, when some motion in abduction and forward flexion has been gained, the use of a low hanging punching bag can be employed in addition to the other routine exercises. As strength returns to the muscles around the shoulder girdle and as range of motion increases, the height of the bag is raised and the force and rapidity of the blows are progressively increased to a maximum. The absorption in this activity minimizes the feeling of pain and allows greater joint mobility. This is difficult to effect in the routine shoulder exercises. Fractures, sprains, and strains with resultant contractures and adhesions can be handled in a similar manner along with or after the patient has completed his orthopedic treatment.

For recurrent dislocations the straight punching exercise can be used to build up muscle tone and to hypertrophy and strengthen the muscular mass

around the shoulder girdle. In this way the head of the humerus can be given more muscular support to help keep it in the glenoid fossa in spite of a stretched and torn capsule. This type of straight punching is used because it avoids abduction and external rotation, the motion most likely to cause a recurrence of the shoulder dislocation.

If all efforts to prevent recurrent dislocations fail and an operation by the Bankart method is necessary, then, as soon as the orthopedic service turns the patient over to physical medicine, the proper exercise described above can be instituted, with precaution regarding the type of punching bag activity.

It has been recommended that a punching motion with pulley weights is effective rehabilitation for fractures about the elbow joint (1). Active extension of the elbow against resistance with reflex relaxation of the flexors can be most effectively accomplished by straight punching of the bag. Again, the absorption in the "doing" and the "learning" of the skill lessens concentration on pain allowing more activity earlier. The gradual progressive nature of supervised learning insures protection against overexertion. Voluntary active movement by the patient is most important in recovery (2). Forcible passive motion or manipulation under anesthesia usually makes matters worse. Complications like myositis ossificans, Volkmann's ischemic contracture and causalgic states may be prevented by early bag striking activities.

The shoulder-hand syndrome, an incompletely understood form of non-articular rheumatism (3), consists of pain in the shoulder or hand or both. The shoulder motion is limited by the pain; the affected hand becomes edematous and so painful that it is held stiffly. After weeks or months atrophy of the shoulder and hand occurs and adhesions or contractures limit motion in the affected parts. This is often considered a form of causalgia. There may be atrophy of bone with osteoporosis shown by x-ray-sudack's atrophy. One of the best methods of treating such causalgia (after eliminating myocardial infarction, painful intrathoracic lesions, vascular accidents, trauma or other irritative lesions above the neck or upper extremity as the cause of a shoulder-hand syndrome) is believed to be vigorous therapeutic exercises administered over a long period. This should be persistent despite the attendant discomfort and pain. The use of the punching bag in the shoulder-hand syndrome can be beneficially employed in the few patients who are able to concentrate sufficiently on this interesting activity to lessen their attention on the pain caused by the exercise. A routine form of activity would lack the concentration necessary to de-

The Therapeutic Value of the Punching Bag in Physical and Mental Rehabilitation

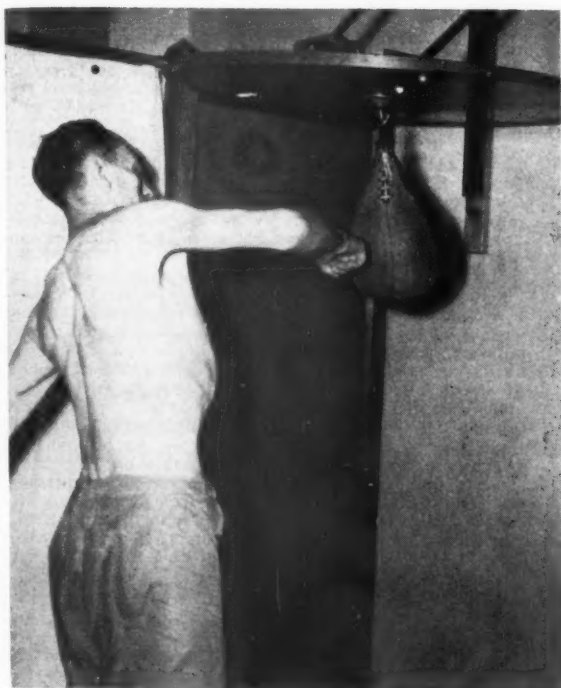


Figure 1. Straight punching exercise



Figure 2. Hooking the bag



Figure 3. Combination straight and side punching

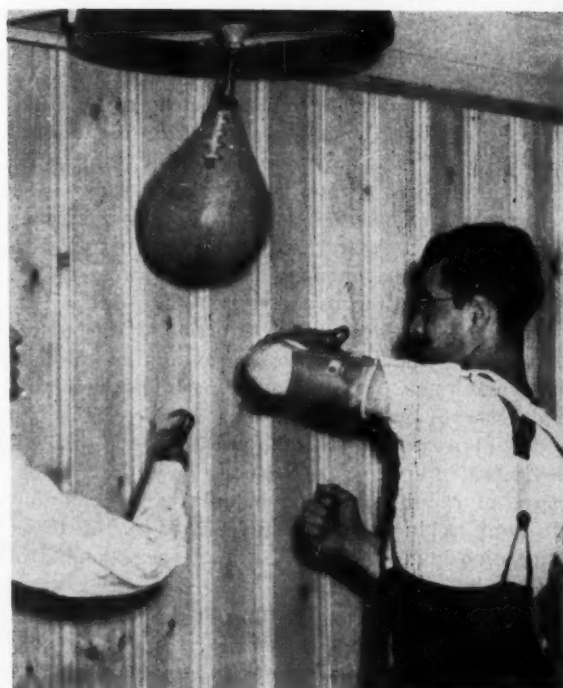


Figure 4. Rotary tattoo punching

tract the patient's attention from the pain to the exertion.

In a recent article (4) stress is placed on the importance of avoiding a frozen shoulder (due to a variety of causes) by maintaining voluntary movement and tone of the muscles around a shoulder by the patient's own efforts. Bag punching can effectively accomplish this objective.

Below elbow amputees and patients with serious gun shot wounds of the chest, with limitation of chest expansion and shoulder girdle motion, have been speeded up in their rehabilitation with the aid of a punching bag routine suitable to their condition. Two cases presented below illustrate the possibilities of this modality with these cases.

CASE 1 — J. C., a below-elbow amputee, had been getting detailed instruction in the use of his Dorrance hook. While working around the gymnasium with various hand tools he noticed the punching bag being used in the gymnasium. He began to strike it, became greatly interested and by employing it was able to gain strength in his shoulder and elbow muscles, gain coordination and lessen his marked feeling of despondency. (Fig. 1)

CASE 2 — O. J., a doctor, was shot through the left side on the chest at a Tarawa landing. He had such limited motion of chest and shoulders that even breathing was an effort. Having once done some professional boxing it was not difficult to convince him that punching the bag might be beneficial. He gained in strength, increased range of chest expansion and was physically as well as mentally helped along the road to reconditioning. (Fig. 2)

Cerebral Lesions. Cases of hemiplegia whether due to a cerebral accident or to trauma have been improved through the medium of the punching bag. The most noticeable improvement has been in coordination and balance. Although it is debatable whether or not there can be much improvement in a paralyzed arm by any form of treatment, this particular method seems to be most effective in teaching the patient, with some motor ability, greater functional use of an upper extremity.

In the hemiplegic there is no true paralysis of muscle but there is a paralysis of motion. There is also more motor than functional ability. Because of the defect in the central nervous system, it is difficult to determine if the recovery of function is due to re-learning or whether the organism adjusts through compensatory activities in other parts of the brain. Whichever of the many theories is correct the objective of treatment must be to attain coordinated movement. Punching bag exercises require a high degree of coordination and balance, a combination of factors lacking in the hemiplegic. With this basic assumption punching bag exercises were taught to our hemiplegics.

The following two cases illustrate the use of the punching bag in hemiplegia.

CASE 1 — This 21 year old veteran in mid-October, 1944 suffered brain damage by shrapnel while in Leyte. He had three cranioplasties and an insertion of a tantalum

plate. There was a residual hemiplegia. On December 12, 1945, the medical report stated that his right hand was held motionless at his side or in his lap, depending upon whether he was walking or sitting. He had no voluntary motion of the fingers, wrist or elbow, and functional use of the upper right extremity was lacking. He walked with a definite hemiplegic gait.

Patient was discharged in the spring of 1946 because it was believed that maximum hospital benefit was attained. However, he returned as an out-patient on October 10, 1947 for the purpose of improving his general muscle tone and strength. He was given various exercises until December 8, 1947 but there was no noticeable improvement in his condition.

He was then started on punching bag exercises. In his first attempts to strike the leather object he missed it completely, struck too low and off to one side, lost his balance and fell forward. Persistent practice resulted in improved coordination, strength, and balance. Within a week he was able to reach the bag and strike it weakly. After two months the patient was able to rhythmically punch the bag although the rate was a slow one. He considered this a tremendous accomplishment and was very happy to be able to learn, what was for him, an enjoyable activity. The importance of this factor psychologically cannot be over-emphasized. A concomitant useful result was the fact that the patient was able to lift his affected upper extremity and put it in his coat sleeve, a movement he was unable to do before. (Fig. 3)

CASE 2 — This 59 year old patient entered the hospital November 3, 1947 as a result of cerebral thrombosis with a right hemiparesis. Neurological examination revealed an inability to move the right arm or leg.

On December 19, 1947 patient was started on a program meant to satisfy the physical demands of daily living. Punching bag exercises were started on January 15, 1948. As in Case No. 1, patient was unable to perform the motion needed to strike the leather. With daily practice there was a sufficient improvement in coordination and balance so that by the eighth day, January 23, 1948, the hemiplegic was able to make contact with the bag.

Improvement from this date was slow but progressive. This patient also learned to punch the inflated leather at a slow rhythmic rate. He manifested considerable pride in this accomplishment because he felt that he achieved a measure of success despite his age and his disability. (Fig. 4)

The fact that the patient learned to punch the bag at his age and with his disability is significant, we feel, for geriatric rehabilitation. A fundamental problem in geriatric rehabilitation is the need to provide for non-competitive activity without sudden mental or physical strain. In bag punching the individual can adjust his activity to his own ability, speed and strength.

Mental Rehabilitation by Physical Activity. From a psychiatric standpoint the use of the punching bag can be an exceptionally effective procedure in rehabilitation. Especially is this true with those patients who have lost contact with reality. With these cases the main problem is resocialization. The first step in resocialization is the arousal of interest. In re-establishing contact with reality it is necessary to begin with simplified individual activities. Therefore, the stress upon individuality inherent in punching bag activity is a productive point for therapeutic attack.

By directing physical and mental energy through concentration on a constructive activity beginning awareness of the patient's own individuality is encouraged. Socrates famous maxim "Know thyself" is a major step in resocialization. John E. Davis (5)

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emphasizes the importance of physical activity in this respect. He states that when one engages in physical activity, one comes in direct contact with reality. We feel this is especially true in punching the bag. It is a direct objective experience in which the patient becomes more modifiable under the excitation of pleasurable sensory stimuli.

With the patient more pliable, learning activities, an important element in resocialization, can be initiated. Teaching the patient bag punching involves basic sensorimotor learning skills in addition to offering activity that provides deep satisfaction. Finally, an important ingredient of resocialization is persistence and regularity, a factor which is very important in learning the skills involved in bag punching.

Probably the greatest value of bag punching to most psychotics and psychoneurotics is the opportunity it provides for releasing hostility and aggression. Often in these cases tension is cumulative and frequently results in explosive and dangerous behavior. Bag punching furnishes mental catharsis by changing the nature of the aggressive activity as well as providing a necessary outlet for the dissipation of this

violent energy. It has been our experience that punching bag activity is an effective method of disciplining aggressive energy and directing it into potentially more effective channels.

Conclusions. In this paper we have described a little used piece of gymnasium equipment which we have beneficially employed in therapeutic exercise for certain conditions. Its chief value in therapy lies in its effectiveness in improving endurance, strength, mobilization of joints, coordination, and balance. It may also be an effective aid in resocialization, recreation, and the learning of a permanent skill. Its inexpensiveness and availability permits its easy use not only in the hospital gymnasium but also in the patient's immediate home environment.

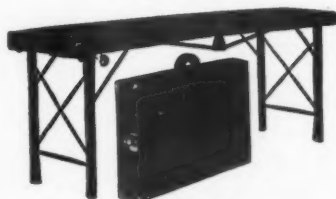
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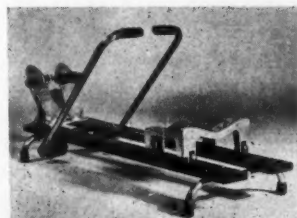
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WADSWORTH FOOTBOARD*

By
ROBERT MAZET, JR., M.D.
and
ELDRED L. BARCLIFF, B.S.

The need for stable, adjustable foot rest for bed patients has long been apparent. The apparatus described below has, at this hospital, met these requirements far better than any previously used footboard. It permits ready adjustment to the length of the patients. It can also be used in place of a cradle to keep bed linen from contact with the patient's feet, and as a bed table.

The adaptive footboard is composed essentially of two sections: the baseboard to which two upright supports are attached with hinges, and the footboard which is held in place by the upright supports. The baseboard is placed between the mattress and the springs of the bed (Fig. 2), and provides the basis of support for the adjustable footboard. The upright supports are slotted to allow the footboard to be adjusted to any thickness of the mattress (Fig. 3). The footboard is attached to the upright supports by two 3/8 inch bolts and wing nuts, located at the center of each end of the board. This allows the adjustment of the board at any angle required for the individual need of the patient. The baseboard may be placed at any location of the bed so that the feet of the patient are always in contact with the footboard. (Fig. 4).

An added feature incorporated in the design allows the footboard to be used as a bed tray or a working surface which may be adjusted to the needs of the bed patient (Fig. 5a, 5b). This is accomplished by moving the baseboard to a comfortable position in the bed and adjusting the footboard to a working height for the patient. It may also be substituted for a cradle to keep the bed clothing from coming into contact with the patient's feet (Fig. 6).

Material and Manufacturing Process:

MATERIAL:

The material necessary for the manufacture of this footboard is as follows:

See Figure No. 1

- 1) One sheet of 1/2 inch fir plywood from which the following are cut

*Developed by Mr. Eldred L. Barcliff, Chief, Manual Arts Therapy, with Dr. Norman Mitchell, Chief, Physical Medicine, of the Rehabilitation Service, Wadsworth General Hospital, Veterans Administration Center, Los Angeles, California.

*From the Orthopedic Service, Wadsworth Hospital, Veterans Administration Center, Los Angeles 25, California.

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One board 12" x 36"

One board 12" x 36-3/4"

Two boards 6" x 18"

- 2) One 36" strip of 5/16" x 1/2" moulding
- 3) Two 6" strop hinges, and 5/8" 10-32 screws
- 4) Two 9' strips of standard 1/2" channel aluminum, with 5/8" No. 6 screws.
- 5) Two 3/8" bolts and wing nuts

Upright Supports:

The upright supports are slotted to allow the footboard to be adjusted to the thickness of the mattress. It is secured to the baseboard with a "T" hinge which allows the supports to be dropped down for ease in making the bed. The hinge is fastened to the inside of the supports, permitting them to be folded flat against the baseboard for convenience in storage. The hinge is secured to the upright supports with 5/8" -10-32 machine screws, and the nuts are counter sunk on the outside of the upright supports to allow the nuts to be flush with the wood.

Procedure—1. Cut upright support 6" x 18"

2. Lay out and mark and cut one end with a 3" radius
3. Cut 3/8" slot starting 1-1/2" from the top and extending for 10"
4. Round all edges and sand surfaces
5. Secure 36" length of 1/2" moulding to one edge of footboard to prevent books, etc. from slipping off when footboard is used as bed table.

Hardware:

Two standard 1/2" channel aluminum strips are applied to the ends of the footboard to provide a protection for the ends of the footboard and to hold the 3/8" locking bolt. The channel aluminum is secured to the footboard with 5/8" No. 6 flat head wood screws.

Procedure—1. Cut 2 lengths of 1/2" channel aluminum 9" long.

2. Round ends with file and smooth with emery cloth.
3. Locate and drill 3/8" hole at center to provide for adjusting bolt.
4. Drill and counter sink holes on edges for 5/8" No. 6 flat head wood screws.

WADSWORTH FOOTBOARD

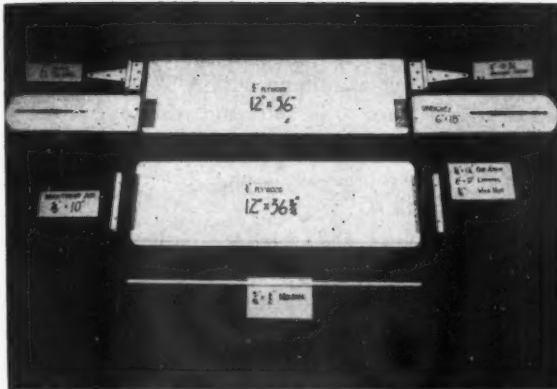


FIGURE 1—Layout of units of footboard prior to assembly.

- (1) 4 pieces of $\frac{1}{2}$ -inch plywood cut to dimensions indicated. The two hinged uprights are slotted.
- (2) 2 6-inch strap hinges and 5/8-inch 10-32 screws.
- (3) 2 9-inch strips of standard $\frac{1}{2}$ -inch channel aluminum with 5/8-inch No. 6 screws.
- (4) 2 3/8-inch bolts and wing nuts.
- (5) 36-inch strip of $5/16 \times \frac{1}{2}$ moulding.



FIGURE 3—Showing the vertical board held in place by wing nuts. (Mattress fits on base board and under vertical board)



FIGURE 5—Illustrating use of footboard as bed table, by sliding it up toward head of bed. Center pivot permits tilting at any angle.



FIGURE 2—Showing base board and winged uprights in place. Mattress rests on and anchors base board. (The hinged uprights drop down when desired and facilitate bed waking).



FIGURE 4—Illustrating adjustability of foot board to length of patient, and his position in bed.



FIGURE 6—Illustration showing the adjustability of footboard to length of patient, and its use to prevent bed clothing from touching the feet.

WADSWORTH FOOTBOARD

Finishing:

All edges and surfaces of the footboard should be smooth and rounded before the final finish is applied. An under coat or sealer is applied by brush or spray gun before the flat and gloss coat is applied. Sand between coats to assure a smooth even finish. A color may be used if it seems advisable; otherwise white lacquer is acceptable.

Summary

A stable, adjustable footboard, which has proven useful at this hospital is described. It is simple in construction. Its fabrication is delineated.

Wadsworth Footboard Illustrations

Fig. 1 Layout of units of footboard prior to assembly

- 1) Four pieces of 1/2" plywood cut to dimensions indicated

- 2) Two 6" strap hinges, and 5/8" 10-32 screws
- 3) Two 9" strips of standard 1/2" channel aluminum with 5/8" No. 6 screws
- 4) Two 3/8" bolts and wing nuts
- 5) 36" strip of 5/16 x 1/2" moulding

Fig. II Shows baseboards, and hinged upright in place by wing nuts.

Fig. III Shows the vertical footboard held in place by wing nuts.

Fig. IV. Illustrates adjustability of footboard to length of patient.

Fig. V-a and V-b Illustrates use of footboard as bed table.

Fig. VI Illustrates use of footboard to prevent bed clothing touching feet.

FIFTH ANNUAL AMPUTEE CONFERENCE KESSLER INSTITUTE FOR REHABILITATION PLEASANT VALLEY WAY

West Orange, N. J.
April 5th, 6th and 7th, 1951

Thursday, April 5th

Upper Extremity

- 9:00—9:15 A. M. — Registration
- 9:15—10:15 A. M. — Introduction to Amputee Problem
- 10:15—10:45 A. M. — Basic Surgery — Upper Extremity
- 11:00—12:00 A. M. — Mechanical Prosthesis
- 12:00— 1:00 P. M. — Luncheon
- 1:00— 1:30 P. M. — Cineplasty and Cineplastic Prosthesis
- 1:30— 1:45 P. M. — Preprosthetic Training — Upper Extremity Amputee Film
- 2:00— 3:00 P. M. — Training Techniques
- 3:00— 4:00 P. M. — Clinic — Arm Amputees

Friday, April 6th

Lower Extremity

- 9:00—10:00 A. M. — Basic Surgery of A. K.
- 10:00—10:30 A. M. — Anatomy of Lower Extremity
- 10:45—11:00 A. M. — Fundamental of Locomotion
- 11:00—12:00 A. M. — Preprosthetic Care — Bandaging — Bed Posture
- 12:00— 1:00 P. M. — Luncheon
- 1:00— 2:15 P. M. — Prosthesis — Selection and Fit Conventional A. K. Prosthesis
- 2:30— 3:45 P. M. — Training Principles and Crutch Walking
- 4:00— 4:30 P. M. — Discussion of Surgical & Prosthetic Aspects—or Clinic—Lower Extremity

Saturday, April 7th

Lower Extremity

- 9:00— 9:45 A. M. — Basic Surgery B. K.
 - 9:45—10:15 A. M. — Conventional B. K. Prosthesis
 - 11:00—12:30 P. M. — Suction Socket Prosthesis
 - 12:30— 1:30 P. M. — Luncheon
 - 1:30— 2:00 P. M. — Tilting Table
 - 2:00— 3:00 P. M. — Demonstration of Training Techniques A. K. and B. K. Amputees
 - 3:15— 4:00 P. M. — Round Table Discussion of Surgical, Prosthetic and Training Aspects
- Lectures and Demonstrations by Staff and Visiting Specialists.
Conference Open to Doctors, Limb Makers, Therapists and Other Rehabilitation Personnel.
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Role of the Physical Medicine Rehabilitation Coordinator In Psychiatric Hospitals

JACK MEISLIN, M.D.

Chief Physical Medicine Rehabilitation
Veterans Administration Hospital, Montrose, N. Y.

The ideal goal of patient management in psychiatric hospitals is to return him to society as a well-integrated, contented and contributing social individual. In order to achieve these results, three basic requirements must be met: the patient must be sufficiently improved from his *mental condition* which necessitated his hospitalization, he needs a proper *social environment*, and requires sufficient *vocational preparedness*. The concept of vocational preparedness in the frame of reference to Medical Rehabilitation is not strictly training for a specific job but a much broader one: it implies the utilization of most, if not all, major resources of a rehabilitation program. Physical Therapy, specialized remedial exercises or Corrective Therapy and active sports participation lay the basic physical groundwork. Occupational Therapy offers among many others the socialization aspect of future vocational inter-personal relationships. Education and Industrial Training contribute to the actual preparation for the job.

However, a Physical Medicine Rehabilitation Service does not limit its function to this "third phase of medical care" (Rusk: 1st phase—prevention, 2nd—diagnosis and treatment, 3rd—rehabilitation) but also acts as an important source of definitive therapy. (actually these two aspects—"rehabilitation" and definitive treatment of a Rehabilitation Service cannot, and should not, be looked upon as distinct from each other.) Therefore, most hospitals maintain a Physical Medicine Rehabilitation program consisting of at least the following sections: Physical Therapy (including hydrotherapy), Occupational Therapy (including training in industrial arts, educational courses, "bibliotherapy," music instruction, Corrective Therapy specialized exercises and group sports. Some hospitals also provide concrete training for aphasics, the hard of hearing, and the blind. Recreational ac-

tivities are often included within the scope of Medical Rehabilitation Service responsibilities.

Most of the progressive neuropsychiatric hospitals have a staff physician designated, either part or full time, as supervisor of the rehabilitation activities. This physician is usually a qualified psychiatrist with special training in physical medicine; less often it is a physiatrist with considerable experience in psychiatry. It is imperative, however, that such physicians be free to exercise their medical skills without being overwhelmed by administrative and personnel matters which exist in proportion to the size of the program. The physician-in-charge establishes the general policies and aims of the program; however, the efficiency of such a program may depend not so much upon the physician himself, but upon the individual designated to assist the physiatrist in the administration of the non-medical functions. He may be called the *coordinator*, *administrative officer*, *executive officer*, *executive assistant*, *rehabilitation officer*, or *educational director* of a rehabilitation department. The importance of having such an individual in a large active psychiatric hospital cannot be overestimated. And yet, one fails to find in the literature on Physical Medicine an adequate discussion of his functions. It is hoped that this presentation will be particularly helpful to those engaged in the organization of a department of physical medicine in a psychiatric hospital.

General Functions of A Coordinator

The primary function of a coordinator of medical rehabilitation activities is to put into practice the policies of the hospital and of the physician in charge of the department. He will be primarily concerned with carrying out administrative functions under the direction of the physiatrist. The latter formulates a project to the coordinator whose responsibility will be to work out the non-medical details and to put the project into efficient operation. Particular attention should be paid to the broad phases of the assignment. The coordinator suggests and devises methods and procedures for the improvement of the service. He offers the physician-in-charge the results of his observations on the functioning of the various activities, particularly those that the physician himself is not able to inspect frequently. The coordinator's assignments will be restricted to matters not requiring medical judgment. It will be his responsibility to call the

(1) "Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration."

(2) Physical Medicine Rehabilitation Service, Franklin Delano Roosevelt VA Hospital,³ Formerly Chief, Physical Medical Rehabilitation Service, VA Hospital, Bedford, Mass.

(3) I am indebted to Dr. Arnold A. Schillinger, Chief Professional Services, for his valuable suggestions and help in the preparation of this paper.

attention of the psychiatrist to problems regarding personnel. He will suggest how these problems may be approached.

The coordinator will not only concern himself with interdepartmental relationships of the Medical Rehabilitation Service itself, but will also manage — through proper channels — administrative relationships with other services or departments.

Scheduling of Patient Activities

Very frequently the prescription calls for several different treatments or activities for the same patient. The coordinator will then schedule these activities so that the hours do not conflict and so that the patient is treated during periods most convenient not only for the Rehabilitation Staff but also for the ward personnel. A detailed knowledge of such ward functions as meal hours, psycho-therapeutic periods, etc. should be classified by the coordinator in chart form. It is also important for him to know when personnel are available to escort those patients to different clinics.

Besides interviews with the Chief of Medical Rehabilitation and the information obtained from the Vocational Interest and Aptitude Tests, it is desirable to have selected patients conducted through rehabilitation activities the hospital may have to offer. In this manner, a better integration of the patients' expressed inclinations and of other medical considerations will result. It is the coordinator who schedules and supervises "tours" of Medical Rehabilitation activities for groups of patients whose clinical progress necessitates a general change of prescription.

The coordinator will furnish individual ward physicians with schedules of all activities of the Rehabilitation Service, including such information as hours, vacancies, special clothing required, and the recommendation of the psychiatrist as to the type of patient suitable for such activities.

Intra-Departmental Coordination

It is the responsibility of the Medical Rehabilitation Coordinator to see that all therapists are acquainted with the function and activities of sections other than their own. Arrangements should be made for periodic visits of members of one section to the activities of the other section. This is particularly important for the section chiefs and new employees.

The coordinator will concern himself with the proper integration of such activities as the industrial and educational departments where the patient is trained in theory for the proper execution of manual skills.

Educational Programs For Staff

The coordinator will suggest and carry out educa-

tional programs for the department members. He will devise visual aids and gather statistical information for this purpose. If necessary, he may solicit the assistance of other departments to provide help for those who are arranging the educational program. It will be the coordinator's responsibility to notify all concerned that such a program is in progress.

The Chief of Physical Medicine may delegate to the coordinator the detailed arrangements for outside lecturers and organizations to offer demonstrations related to medical rehabilitation. He will see to the printing or mimeographing of material which would be of interest to physicians, nurses, aides and others. It is desirable that the coordinator establish a Medical Rehabilitation Bulletin, or other publication, which could be distributed at regular intervals to all concerned. The coordinator will arrange to have suitable motion pictures, selected by the physician to be presented either for retraining of the staff itself or as training films for the patients. In this connection, it is desirable to instruct several members of the Rehabilitation staff in the operation of motion picture equipment. He will also concern himself with establishing a Medical Rehabilitation library where the members of the department may obtain information for therapy or research.

Very often the coordinator's educational background qualifies him to act as an instructor himself offering courses to staff members or even to groups of patients.

The coordinator will supervise exhibits, either in the hospital or in the community, which would be a part of the educational program by the Medical Rehabilitation Service. The coordinator may supervise a staff presentation of Medical Rehabilitation activities where staff members themselves portray their every day roles and employ actual equipment used in their daily procedures. This method proved to be in our experience a highly effective and at the same time entertaining means of educating not only the hospital staff but also visitors.

There never seems to be enough personnel to take care of hospital needs. Much assistance has been tendered by volunteers: Red Cross, Gray Ladies, Orchid Ladies, social welfare organizations. Community groups have always been very helpful in offering their services. The success or failure of a volunteer program depends mostly upon effective organization and supervision. The responsibility of the coordinator is to operate this program in his department so that it will result not only in benefit to the patients and be of assistance to the personnel, but will also be gratifying to the volunteers. Training courses have

Role of the Physical Medicine Rehabilitation Coordinator in Psychiatric Hospitals

to be arranged, schedules maintained, transportation supplied, and work outlined so that the volunteer can be "happily busy." Volunteers should be screened and they should be assigned to sections according to their needs and according to the volunteers' abilities. The coordinator will handle many of those things himself or with the help of the Medical Rehabilitation personnel. Other hospital facilities such as Psychological Testing are set up to function in conjunction with the Medical Rehabilitation Department. A contented Volunteer is the hospital's best public relations agent.

Supervision of Personnel

Personnel problems such as the administrative task of hiring new workers, keeping records of attendance, according absenteeism and vacation schedules, are non-medical features which need concern the psychiatrist very little. Of course, the latter will interview and select his personnel from the list of applicants.

The *morale* of personnel is not always dependent upon the salaries they receive nor is it entirely influenced by the type of work they are doing. There are numerous other factors, which affect the happiness of an employee. The coordinator can help to a great extent by his position as the departmental procurement officer of supplies and equipment, which is often the source of irritation to therapists. However,

the coordinator can go further than that. He can organize the Medical Rehabilitation personnel into a social unit. He may acquire a location where staff members may meet in a pleasant environment either at meals or after working hours. In this situation members of the Physical Medicine Rehabilitation Service may learn more about fellow workers, their problems and activities pertaining to Medical Rehabilitation than is possible otherwise. A small fund may be established to take care of inexpensive gifts for social events and special occasions. Sports events may be organized for competition among the members themselves or with other hospital department groups. This has always resulted in a greater unity among hospital co-workers. In order for a Medical Rehabilitation Service to function "as a team, as a unit", it is not enough to talk to them about it; it is measures such as outlined here that contribute a great deal towards the realization of the concept of team work. The presence of the psychiatrist at these informal gatherings adds much to reinforce the inter-service relationship.

Function As A Safety Inspector

This writer cannot think of anything more discouraging to the Ward Physician than injury to patients under treatment. This would also set back the progress of a rehabilitation program not only for the patient involved but also for the service inas-



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much as ward doctors would hesitate to refer their patients to that service. Every ward physician must have the assurance that he is not exposing his patients to undue risks by referring them to the Medical Rehabilitation Department. The psychiatrist and professional therapists are, of course, responsible for safety precautions incidental to the actual administration of therapy. Nonetheless there are numerous factors involving safety and health of employees as well as patients which lie in the province of the coordinator. It is an important function of the coordinator to make periodic safety and health inspections to all rehabilitation activities and to report to the psychiatrist conditions which are potentially dangerous to patients or personnel. He should devise appliances or take other measures necessary to eliminate such hazards. A written inspection report should be submitted at regular intervals to the physician-in-charge.

As A Public Relations Officer

The coordinator has to be prepared to offer an interesting account of the activities of the Medical Rehabilitation Service or its major phases to visitors to the department. These may be members of the hospital staff, students, officials, or relatives of patients. The use of visual aids such as charts, diagrams or statistical information in the office of the coordinator will prove to be of much help to him in this public relations role. This function of the coordinator should not be minimized, as is well known to those whose budget depends upon legislated grants.

As Research Engineer

The importance of research need not be stressed here. It is natural for members of a Medical Rehabilitation Department to be reluctant to accept additional burdens of such projects. However, once initiated, they take a great deal of interest in them and are stimulated by such work. Most research activities will probably originate with the psychiatrist and will relate to medical problems. Nevertheless, there are a number of technical difficulties where the services of the coordinator can be utilized. There is equipment which may be necessary for the research; this equipment may be designed and prepared by the coordinator. He could also make the necessary charts or statistical tabulations. The coordinator could contact personnel and patients to report at a scheduled hour. Enlistment of personnel as controls is frequently a challenge to the coordinator. An important method of becoming acquainted with new procedures and of improving service is that of visits to other neuropsychiatric or even general hospitals. It is advisable to have Chiefs of Sections of the Medical Rehabilitation Department accompany the

coordinator and the psychiatrist on these visits, which are arranged by the coordinator. He will also make an attempt to learn about the latest development in Medical Rehabilitation by correspondence and reading.

Property, Supplies, Equipment and Budget

Physicians are reluctant to devote such time to non-clinical matters such as supplies, equipment or finance. The psychiatrist must be able to deal with these problems but he is only too glad to turn over the details of these responsibilities to the coordinator. The latter will be responsible for processing requisitions and recommendations of the Section Chiefs and other members of the staff. He will follow through on these requisitions and eliminate possible bottlenecks. The coordinator should be acquainted with supply catalogs and be on the alert for material of benefit to the department. He will concern himself with storage places. It is his function to see that the necessary construction requested by the sections of the department is expedited. A simple notebook entry shown below has proven to be an excellent follow-up guide:

Coordinator's Assignment and Progress Record

Date	Project	Requested	Date	Initial	Date	Remarks
			by	Due	Action Completed	

The coordinator will act as the Finance Officer of the Medical Rehabilitation Department. With the help of the Section Chiefs, he will prepare and justify the budget. This will then be reviewed by the physician-in-charge. It will also be the responsibility of the coordinator to see that the allotted finances are utilized economically.

As Legal Adviser

The coordinator should be acquainted with pertinent regulations, circulars, bulletins and other sources of information issued not only locally but also by higher authorities such as state, federal government, or by the Civil Service Commission. If necessary, abstracts of such regulations will be mimeographed and distributed to those concerned.

The coordinator has the task of preparing all the departmental reports which the Medical Rehabilitation Department may be requested to submit. He will devise methods for simplification of such reports and procedures for obtaining the necessary information. He may suggest improvements in the filing system of the department sections.

In some hospitals it may be convenient for the coordinator to supervise all the secretarial help available to the department by forming a pool and apportioning this help among the sections.

Relationship Of The Coordinator To The Psychiatrist In Charge

While the psychiatrist sets the course, establishes policy and carries the ultimate responsibility for the

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functioning of the Medical Rehabilitation Department, the relationship between the physician and the coordinator is more in the nature of a "partnership" where both have the same goal in mind; the physician takes care of all the medical matters, while the non-medical "partner" manages the administrative problems. It is important for the physician to acquaint the coordinator with medical conditions bearing upon the administration of the department. At the same time, it is essential for the coordinator to inform the physician-in-charge of significant non-medical situations and problems. It is therefore desirable for them to occupy adjoining offices. Complete confidence in each other's ability and sincerity are necessary for optimum function.

Probably the greatest asset for the coordinator is "dependability." If a psychiatrist can think to himself, when he outlines an assignment to the coordinator, "I need no longer be concerned with this matter; it will be taken care of as if I handled it myself" the criterion of dependability is met.

Relationship To Other Members Of The Medical Rehabilitation Staff

It is extremely important that the physician in charge of the department delegate to the coordinator as much authority as possible. He should be given complete and almost final power of decision in matters of such non-medical nature as supplies, equipment, safety measures, schedule regulations, reports. An important factor that will strengthen this authority is the knowledge on the part of the staff that the coordinator has an influential voice in such matters as promotions and efficiency ratings. The physician should consult the coordinator upon these and similar matters.

In his relation with the therapists, *the coordinator must avoid passing judgment on medical matters pertaining to the therapists' field.* This is the sole province of the psychiatrist.

The coordinator will preside at the administrative meetings. All official correspondence of the Service is to be routed through him. He initials incoming and outgoing mail and refers to the physician in charge material which should come to his attention.

Follow-Up Surveys

The effectiveness of a Rehabilitation program should be judged by long range results. It is, therefore, of major importance to evaluate the therapeutic benefit of such a program not only while the patient is still in the hospital but also after he is discharged or is out on trial in the community.

Because of the multitude of factors involved, a determination of the role played by Physical Medicine in the successful treatment of a patient can be only speculative. Nevertheless, some information may

be obtained as to the effectiveness of the Rehabilitation activities through social service, personal contracts, or questionnaires sent to patients. Much valuable data thus obtained may be used as a guide in the molding of the rehabilitation service.

The coordinator would devise means of making these surveys as regular and representative as possible. He will help the psychiatrist evaluate the results and take the proper corrective measures whenever necessary. These follow-up surveys are of much greater importance than their dearth might indicate.

Qualifications

As yet, no educational institution offers a complete course in Medical Rehabilitation Coordination. It is difficult even to suggest what the necessary qualifications for this position may be. In general, however, one must have ability in administrative matters. Talent for effective public relations is essential. Some knowledge of the administrative phases of the various components of the Rehabilitation Service is desirable. This is also true of the neuropsychiatric ward activities. Original thinking, initiative, good judgment, and a great deal of ingenuity are most valuable. Comprehension of the aims of a Physical Medicine Rehabilitation program is imperative.

Some Considerations in the Evaluation of Self Care (Continued from Page 6)

2. The practical utilization of the test items makes it necessary for the nursing service to be aware as to what skills in the way of self care the patient learns in the clinic so they can be applied on the ward. Several hospitals have developed small bed tag size forms which give the ward personnel a quick appraisal of the patient's status in regard to his ability to care for himself. It must be remembered that initially the insistence of the nurses and attendants that the patient attend to his own wants when able entails more rather than less effort and time on their part. Standing by as a safety precaution as the patient slowly gets from the bed to a wheelchair on his own instead of quickly assisting him may take much forbearance in the face of all the work needing to be done on the ward. In the end of course time is saved and psychological benefit for the patient cannot be overestimated. One hospital which made a test study on five patients learning to do seven items of self care concluded that the time saved ward personnel amounted to six hours and fifty five minutes per day. The total time of instruction amounted to four hours and ten minutes which was a one time expenditure.

The seven items taught were; 1) Into bed, 2) Out of bed, 3) Change positions in bed, 4) Shave, 5)

Some Considerations in the Evaluation of Self Care

Shoes on, 6) Shoes off, 7) To commode.⁸

The last group of personnel to be discussed here as to what implications the evaluation may have, may be next in importance after the patient himself. It is the patient's family who, perhaps, have the greatest potential for good or bad as to the eventual attainment of a status of independence by the patient. The family certainly should be made acquainted with what the patient can do and it might be ideal if a member could spend some time with the patient and the therapist in which the patient could demonstrate his abilities. In such a meeting the possibilities of the home situation could be worked out. Oftentimes simple adjustments in the home make all the difference, the installation of a hand rail, for example, being the difference between a patient being independent in going up stairs and in being dependent upon someone. Other modifications can be suggested and of course the burden and responsibility falls upon the family to actually make them. The enlistment of their cooperation is essential and should be a simple matter once they understand the reasons. It may even be feasible for a therapist to visit the home and suggest simple adjustments in equipment and furnishings. The assistance of the Social Worker in this area is of course obvious.

In the above discussion it has been endeavored to point out that an evaluation of self care has great potentials as a rehabilitation device. Consequently considerable care should be used in both developing and implementing it. Selection of the test items should be well thought out and they, while numerous enough to cover all essentials, should be kept at a minimum so a quick appraisal of the patient's capabilities can be made by the physician. There are a multitude of activities in any one's life and it is conceivable that anything one does can be construed as essential for his particular self care. This conception would broaden the scope of any evaluation far beyond practicability. In addition an attention to the mechanics of an activity should be paid to avoid duplications of more or less identical movements. Doing this will further enable the number of items on the evaluation to be kept at a minimum. The movements involved in operating a flip switch for a radio, bed lamp, signal light etc. are all the same, and can be combined in one item of the test. Similarly, others could be. A study made on the basic patterns of movement for self care of handicapped persons might make an excellent research project and it may be possible that such work could be done along the line Gilbreth⁹ suggests in applying her motion studies to rehabilitation. Local differences in the matter of types of patients, the uses to which the evaluation is put, the detail with which time and personnel allow

for the development of this aspect of rehabilitation, the facilities available and, primarily, the importance which is attached to training in self care should all be considered and will make for deviations from a basic pattern.

Summary

Nine forms for the evaluation of self care have been surveyed with the conclusion that there exists considerable difference of opinion as to what self care items are considered necessary for an evaluation of the patient's ability to be independent in caring for himself in daily needs.

These differences are in part attributed to variances in a basic definition of what is meant by self care. A definition is presented.

A general discussion of the purposes and uses of a self care evaluation has been given with suggestions as to major and minor points which should be considered in the construction and utilization of a self care evaluation.

The need for research is mentioned and possible research problems are presented.

The self care evaluation is established as a very valuable device for rehabilitation and should be utilized carefully and extensively in the rehabilitation of severely handicapped individuals.

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FORMS SURVEYED

1. Physical Demands of Daily Life—Institute for the Crippled and Disabled, New York 10, N. Y.
2. My Own Score. Veterans Administration Form 10-2555.
3. Georgia Warm Springs Foundation Functional Evaluation.
4. State of Connecticut Hospital for Chronic Illness. Activities of Daily Living Functional Evaluation for Self Care.
5. Self Care Evaluation from Veterans Administration Hospital, Memphis, Tenn.
6. Self Care Evaluation from Veterans Administration Hospital, Minneapolis, Minn.
7. Institute of Physical Medicine and Rehabilitation, New York, N. Y.
8. Self Care Evaluation from Veterans Administration Hospital, Ft. Thomas, Ky.
9. Self Care Evaluation from Veterans Administration Hospital, Houston, Tex.

NEWS AND COMMENTS

New Laws for Korea War Veterans

The sum total of benefits granted thus far, fall short of those accorded World War II veterans. Servicemen or women who have been or may become disabled during the present hostilities are now eligible for vocational rehabilitation at Government expense as a result of the extension of the law granting education and training to disabled veterans. Families of enlisted men presently serving in the armed forces were granted allotments by a law passed last September. The amount paid by the Government ranges from \$40.00 to \$80.00 per month depending on the serviceman's rank. The Internal Revenue Act of 1950 provided relief from income tax payments for members of the armed forces on active duty. The military pay of all enlisted men in the Korean combat zone was excluded from Federal taxation and the first \$200.00 per month paid to commissioned officers was also made exempt. Another law passed exempts service personnel from transportation tax when traveling on public carriers during official furloughs, leaves, or passes. Wartime compensation will be granted only if the person involved is injured while engaged in extra-hazardous duty—namely combat.

Under consideration and pending, are bills to include all service personnel for war time compensations, if injured. Extend the full World War II GI Bill of Rights to the Korean veteran (employment, loans, and education). And also provide free insurance totaling \$10,000 to all servicemen and women and make it retroactive to June 27, 1950.

"One Piece Swimming Pool"

A specially equipped "one-piece swimming pool" will be used in the treatment of disabled persons at the new New York University-Bellevue Medical Center. The pool, delivered as one piece of welded stainless steel, is being installed at a cost of \$100,000 in the center's first unit. This unit, now nearing completion will house the center's Institute of Physical Medicine Rehabilitation. Stretcher patients will be lowered into the pool by an overhead traveling crane. Special ramps will allow easy access to the water for other disabled persons.

The annual convention of the American Association of Rehabilitation Therapists will be held at the Phoenix Hotel, Lexington, Kentucky, June 14, 15 and 16. All those interested in rehabilitation are invited to attend. Reservation for rooms or exhibit

space may be sent to Mr. Joseph Harris, 844 Meadow Lane, Lexington, Kentucky. It is hoped that the companies who advertise in this magazine will send exhibits.

BOOK REVIEWS

PROGRESSIVE RESISTANCE EXERCISE, TECHNIC AND MEDICAL APPLICATION, by Thomas L. DeLorme, M.D. and Arthur L. Watkins, M.D., 245 pages; February 1951. Illustrated. Published by Appleton-Century-Crofts, Inc. New York.

This is one of the most unusual and useful medical titles published in the field of Exercise Therapy. Written by outstanding medical authorities in the field of Physical Medicine Rehabilitation, it presents a comprehensive presentation of the medical application of exercises in the treatment of muscle function resulting from disease or injury.

There are detailed illustrations that are exceptionally helpful in a complete manual form. This book is highly recommended as a text for, doctors of Physical Medicine, Corrective Therapists, and Orthopedic specialists.

Many are familiar with the background and the development of the work in heavy resistance exercise, beginning with Dr. DeLorme's original research at the Gardiner Army Hospital, Chicago and the Pope Memorial Exercise Clinic Massachusetts General Hospital.

—A. D. T.

PERSONAL ADJUSTMENT IN OLD AGE. By Ruth Shoule Cavan, Ernest W. Burgess, Robert J. Havighurst, and Herbert Goldhammer. Cloth. Price \$2.95. pp. 204. Published by Science Research Associates, Inc., Chicago, Illinois, 1949.

A study on the psychological problems of aging, mostly from the sociological point of view is presented in monogram form. Most of the book deals with two test or questionnaires for measuring adjustment in the elderly One, an Inventory of Activities and the other an Inventory of Attitudes are the test devised for group testing of the activities and attitudes of older people. A portion of the book is devoted to the general features of the aging process, the interplay of the cultural, familial forces, and what meager statistical studies that are available. The book concludes that the two questionnaires should be used as a part of the whole study of each individual. The authors bring forth the common sources of stress and strains in old age. To the readers who are interested in the problems of geriatrics this monogram may be valuable in stimulating further research.

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